GNSS Antennas

GNSS Active Patch and Flexible antennas complement ceramic and LDS-MID chip selections for superior signal processing and ground-independence over a wide range of navigation and tracking applications.

Features and Advantages

- **Topside of the poly-flexible antenna**: Makes for easy peel-and-stick mounting anywhere within the device chassis.
- **Double-sided adhesive on the antenna reverse**: Enables instant application anywhere on the inner wall of the device chassis by just removing its tape liner.
- **6 Micro-coaxial Cable Length options** (50, 100, 150, 200, 250, 300mm): Extends connectivity for maximum design flexibility.
- **Low-profile design**: Provides space savings.
- **Excellent re-stripping characteristics**: Allows product re-usage within 48 hours.
- **Silver Pin**: Positions and fixes the antenna to the PCB (via soldering); provides electrical contact between antenna and board.
- **Ceramic Patch Antenna**: Delivers high gain, high radiation efficiency performance for the most demanding GPS applications.
- **UFL-type connector**: Secures to the application’s device radio.
- **IPEX-1 connector**: Secures to the application’s device radio.
- **PCB with integrated LNAs and SAW Filter**: Ensures filtered, amplified signals are transmitted by the ceramic antenna on it.

**Applications**

- **Automotive**
  - Navigation devices
- **Commercial Vehicles**
  - High-speed rail
- **Industrial**
  - Drones
- **Maritime Port Technology Systems**
- **Surveying and Mapping Systems**
- **Emergency Response Systems**

*The series 206640 antenna is an active patch antenna with ceramic patch, ground plane (PCB), 2-stage LNA and SAW (Surface Acoustic Wave) filter - all integrated within a compact 25 by 25 by 6.5mm module complete with a 60mm cabled (IPEX-1 connector) extension.*
# GNSS Antennas

## Specifications

### REFERENCE INFORMATION
- Packaging: Tape-and-Reel (146216, 146235, 204283)
- Tray (146168, 204286, 206640, 208890)
- PET Film (206560)
- Designed In: mm
- RoHS: Yes
- Halogen Free: Yes

### ELECTRICAL
- RF Power (Watt): 2
- Average Total Radiation Efficiency: Refer to Product Specifications
- Peak Gain: Refer to Product Specifications
- Input Impedance (ohms): 50

### PHYSICAL
- Housing: Ceramic (206640, 204286, 204283, 146168, 208890)
- Flexi (206560)
- LDS-MID (146216, 146235)
- Plating: Refer to Sales Drawings
- Operating Temperature:
  - -40 to +85°C (206560, 206640)
  - -40 to +125°C (146168, 146216, 146235, 204283, 204286)
  - -30 to +85°C (208890)

## GNSS Antenna Family

<table>
<thead>
<tr>
<th>Antennas</th>
<th>GNSS Flexible Antenna (206560)</th>
<th>GNSS Active Patch Antenna with Low-Noise Amplifier (206640)</th>
<th>Helix GPS Antenna (146235)</th>
<th>RHCP LDS-MID GPS Antenna (146216)</th>
<th>RHCP Ceramic GPS Antenna (146168)</th>
<th>GPS/BEIDOU/ GLONASS Ceramic Antenna (204286)</th>
<th>Low-profile GNSS Ceramic Antenna (204283)</th>
<th>Low-profile GPS Ceramic Antenna (208890)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimension</td>
<td>40.40 by 15.40mm</td>
<td>25.00 by 25.00 by 6.50mm</td>
<td>3.00 by 5.00 by 4.00mm</td>
<td>11.80 by 11.55 by 4.00mm</td>
<td>25.00 by 25.00 by 4.00mm</td>
<td>25.00 by 25.00 by 4.00mm</td>
<td>3.20 by 1.60 by 1.10mm</td>
<td>18.00 by 18.00 by 2.00mm</td>
</tr>
<tr>
<td>PCB Clearance</td>
<td>No clearance</td>
<td>No clearance</td>
<td>4mm x 6mm</td>
<td>No clearance</td>
<td>No clearance</td>
<td>No clearance</td>
<td>5mm x 6mm</td>
<td>No clearance</td>
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<tr>
<td>Material</td>
<td>Flexi</td>
<td>Ceramic + PCB + Tin Plate</td>
<td>LDS</td>
<td>LDS</td>
<td>Ceramic</td>
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<td>Ceramic</td>
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<tr>
<td>Antenna Type</td>
<td>Dipole</td>
<td>Active Patch</td>
<td>Monopole</td>
<td>PIFA</td>
<td>Patch</td>
<td>Patch</td>
<td>Loop</td>
<td>Path</td>
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<tr>
<td>Frequency Range</td>
<td>1561 – 1602 MHz</td>
<td>1561 – 1602 MHz</td>
<td>1561 – 1602 MHz</td>
<td>1575 MHz</td>
<td>1561 – 1602 MHz</td>
<td>1561 – 1602 MHz</td>
<td>1575 MHz</td>
<td>1575 MHz</td>
</tr>
<tr>
<td>Return Loss</td>
<td>&lt; -8dB</td>
<td>- 8dB (VSWR 2.5)</td>
<td>&lt; -8dB</td>
<td>&lt; -10dB</td>
<td>&lt; -15dB</td>
<td>&lt; -10dB</td>
<td>&lt; -10dB</td>
<td>&lt; -15dB</td>
</tr>
<tr>
<td>Peak Gain</td>
<td>1.5dBi</td>
<td>LNA 28dB</td>
<td>1.1dBi</td>
<td>1dB</td>
<td>5.5dBi</td>
<td>5.5dBi</td>
<td>2.0dBi</td>
<td>2.6dBi</td>
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<tr>
<td>Total Efficiency</td>
<td>&gt; 74% (50mm)</td>
<td>NA</td>
<td>&gt;50%</td>
<td>&gt;55%</td>
<td>&gt;75%</td>
<td>&gt;70%</td>
<td>&gt;60%</td>
<td>&gt;45%</td>
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<tr>
<td>Polarization</td>
<td>Linear</td>
<td>RHCP</td>
<td>Elliptic</td>
<td>RHCP</td>
<td>RHCP</td>
<td>Elliptic</td>
<td>Linear</td>
<td>RHPC</td>
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<tr>
<td>Axial Ratio</td>
<td>N.A.</td>
<td>N.A.</td>
<td>&lt; 6.0</td>
<td>&lt; 3.0</td>
<td>&lt; 3.0</td>
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<td>N.A.</td>
<td>&lt; 2</td>
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## Ordering Information

<table>
<thead>
<tr>
<th>Series No.</th>
<th>Description</th>
<th>Mounting Style</th>
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<tbody>
<tr>
<td>206560</td>
<td>GNSS Flexible Antenna</td>
<td>Peel-and-stick</td>
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<tr>
<td>206640</td>
<td>GNSS Active Patch Antenna with Low-Noise Amplifier</td>
<td>SMT</td>
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<td>SMT</td>
</tr>
<tr>
<td>208890</td>
<td>18x18mm GPS Ceramic Antenna</td>
<td>Peel-and-stick</td>
</tr>
</tbody>
</table>

www.molex.com/link/gnss-gps.html

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